

1. A composite absorbent structure, comprising:

a. a first wicking layer comprising wettable lamellae wherein the first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.08 grams of liquid per minute per gram of absorbent structure per meter length of the first wicking layer;

b. a second retention layer comprising a hydrogel-forming polymeric material; and/or

c. a bonding agent for bonding said first wicking layer and said second retention layer to form a composite absorbent structure capable of liquid transport and liquid retention functions at a length of at least about 15 centimeters, a saturated capacity of at least about 5 grams of liquid per gram of composite absorbent structure, and an Absorbent Capacity at 15 cm of at least about 5 grams of liquid per gram of second retention layer.

2. The composite absorbent structure of Claim 1, wherein said absorbent structure has a wet geometric mean breaking length of at least 5 meters and a dry geometric mean breaking length of at least 50 meters, and wherein said first wicking layer exhibits a vertical liquid flux rate at a height of about 5 centimeters of at least about 0.4 grams of liquid per minute, said first wicking layer exhibits a wicking time of less than about 3.5 minutes, and said first wicking layer, has a basis weight greater than 100 grams per square meter and less than 300 grams per square meter.

3. The absorbent structure of Claim 1, wherein said bonding agent comprises polyhydroxyalkanoate.

4. The absorbent structure of Claim 1, wherein said bonding agent comprises poly(lactic) acid.

5. The absorbent structure of Claim 1, wherein said hydrogel-forming polymeric material comprises a superabsorbent.

6. The absorbent structure of Claim 1, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.1 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

7. The absorbent structure of Claim 1, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.2 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

8. The absorbent structure of Claim 1, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 5 centimeters of at least about 0.4 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

9. The absorbent structure of Claim 1, wherein said first wicking layer exhibits a vertical liquid flux rate value at a height of about 5 centimeters of at least about 0.6 grams of liquid per minute per gram of first wicking layer per meter length of cross-sectional width of said first wicking layer.

10. A composite absorbent structure, comprising:

a. a first wicking layer comprising wettable foams wherein the first wicking layer exhibits a vertical liquid flux rate value at a height of about 15 centimeters of at least about 0.08 grams

of liquid per minute per gram of absorbent structure per meter length of the first wicking layer;

b. a second retention layer comprising a hydrogel-forming polymeric material; and/or

5 c. a bonding agent for bonding said first wicking layer and said second retention layer to form a composite absorbent structure capable of liquid transport and liquid retention functions at a length of at least about 15 centimeters, a saturated capacity of at least about 5 grams of liquid per gram of composite absorbent structure, and an Absorbent Capacity at 15 cm of at least about 5
10 grams of liquid per gram of second retention layer.

11. The composite absorbent structure of Claim 10, wherein
said wherein said absorbent structure has a wet geometric mean
breaking length of at least 5 meters and a dry geometric mean
breaking length of at least 50 meters, and wherein said first
wicking layer exhibits a vertical liquid flux rate at a height of
about 5 centimeters of at least about 0.4 grams of liquid per
minute, said first wicking layer exhibits a wicking time of less
than about 3.5 minutes, and said first wicking layer, has a basis
weight greater than 100 grams per square meter and less than 300
grams per square meter.

12. The absorbent structure of Claim 10, wherein said bonding agent comprises polyhydroxyalkanoate.

25 13. The absorbent structure of Claim 10, wherein said bonding agent comprises poly(lactic)acid.

14. The absorbent structure of Claim 10, wherein said hydrogel-forming polymeric material comprises a superabsorbent.

15. The absorbent structure of Claim 10, wherein said first
wicking layer exhibits a vertical liquid flux rate value at a
height of about 15 centimeters of at least about 0.1 grams of
liquid per minute per gram of first wicking layer per meter length
5 of cross-sectional width of said first wicking layer.

16. The absorbent structure of Claim 10, wherein said first
wicking layer exhibits a vertical liquid flux rate value at a
height of about 15 centimeters of at least about 0.2 grams of
liquid per minute per gram of first wicking layer per meter length
10 of cross-sectional width of said first wicking layer.

15. The absorbent structure of Claim 10, wherein said first
wicking layer exhibits a vertical liquid flux rate value at a
height of about 5 centimeters of at least about 0.4 grams of
liquid per minute per gram of first wicking layer per meter length
of cross-sectional width of said first wicking layer.

16. The absorbent structure of Claim 10, wherein said first
wicking layer exhibits a vertical liquid flux rate value at a
height of about 5 centimeters of at least about 0.6 grams of
liquid per minute per gram of first wicking layer per meter length
20 of cross-sectional width of said first wicking layer

19. A method of forming a composite absorbent structure,
comprising:

a. providing a first wicking layer of wettable cellulosic
lamellae or foams wherein the first wicking layer exhibits a
vertical liquid flux rate value at a height of about 15 centime-
25 ters of at least about 0.08 grams of liquid per minute per gram of
absorbent structure per meter length of the first wicking layer;

b. providing a second retention layer of a hydrogel-forming polymeric superabsorbent material;

c. providing a bonding agent for bonding said first wicking layer and said second retention layer; and

5 d. combining said first wicking layer, said second retention layer, and said bonding agent to form a composite absorbent structure having a minimum contact intimacy ratio for providing a liquid transport function and a liquid retention function such that the first wicking layer and the second retention layer are combined together in a manner to obtain a contact to achieve

10 liquid transport and liquid retention functions at a length of at least about 15 centimeters, a saturated capacity of at least about 5 grams of liquid per gram of composite absorbent structure, and an Absorbent Capacity at 15 cm of at least about 5 grams of liquid per gram of second retention layer.

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20. The method of forming a composite absorbent structure absorbent structure as set forth in Claim 19, wherein said absorbent structure has a wet geometric mean breaking length of at least 5 meters and a dry geometric mean breaking length of at least 50 meters, and wherein said first wicking layer exhibits a vertical liquid flux rate at a height of about 5 centimeters of at least about 0.4 grams of liquid per minute, said first wicking layer exhibits a wicking time of less than about 3.5 minutes, and said first wicking layer, has a basis weight greater than 100 grams per square meter and less than 300 grams per square meter.

21. The method of forming a composite absorbent structure absorbent structure as set forth in Claim 19, wherein said bonding agent comprises polyhydroxyalkanoate.

22. The method of forming a composite absorbent structure absorbent structure as set forth in Claim 19, wherein said bonding agent comprises poly(lactic) acid.

5 23. A disposable absorbent product comprising a liquid-permeable top sheet, a back sheet attached to said top sheet, and an absorbent structure positioned between said top sheet and said back sheet, said absorbent structure having a first wicking layer of wettable lamellae or foams exhibiting a vertical liquid flux
10 rate value at a height of about 15 centimeters of at least about 0.08 grams of liquid per minute per gram of absorbent structure per meter length of said first wicking layer, a second retention layer of a hydrogel-forming polymeric superabsorbent material, and a bonding agent for bonding said first wicking layer and
15 said second retention layer to form a composite absorbent structure having a minimum contact intimacy ratio for providing a liquid transport function and a liquid retention function such that said first wicking layer and said second retention layer are combined together in a manner to obtain a contact to achieve liquid trans-
20 port and liquid retention functions at a length of at least about 15 centimeters, a saturated capacity of at least about 5 grams of liquid per gram of composite absorbent structure, and an Absorbent Capacity at 15 cm of at least about 5 grams of liquid per gram of second retention layer.

25 24. The composite absorbent structure of Claim 23, wherein said absorbent structure has a wet geometric mean breaking length of at least 5 meters and a dry geometric mean breaking length of at least 50 meters, and wherein said first wicking layer exhibits a vertical liquid flux rate at a height of about 5 centimeters of at least about 0.4 grams of liquid per minute, said first wicking layer exhibits a wicking time of less than about 3.5 minutes, and
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said first wicking layer, has a basis weight greater than 100 grams per square meter and less than 300 grams per square meter.

25. The absorbent structure of Claim 24, wherein said bonding agent comprises polyhydroxyalkanoate.

5 26. The absorbent structure of Claim 24, wherein said bonding agent comprises poly(lactic)acid.